

What IS CLAIMED IS:

5 Sub A2 1. A cryptographic device for securing data on a computer network comprising:

a processor programmed to authenticate a plurality of users on the computer network for secure processing of a value bearing item;

10 a memory for storing security device transaction data for ensuring authenticity of a user, wherein the security device transaction data is related to the one of the plurality of users;

a cryptographic engine for cryptographically protecting data; and

15 an interface for communicating with the computer network.

2. The cryptographic device of claim 1, wherein the processor is programmed to verify that the identified user is authorized to assume a role and perform a corresponding operation.

20 3. The cryptographic device of claim 2, wherein the assumed role is a key custodian role to take possession of shares of keys.

25 4. The cryptographic device of claim 2, wherein the assumed role is an administrator role to manages a user access control database.

30 5. The cryptographic device of claim 2, wherein the assumed role is a provider role to authorize increasing credit for a user account.

6. The cryptographic device of claim 2, wherein the assumed role is a user role to perform expected IBIP postal meter operations.

35 7. The cryptographic device of claim 1 further comprising a stored secret for cryptographically protecting data.

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8. The cryptographic device of claim 1, wherein the secret is a password.

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9. The cryptographic device of claim 1, wherein the secret is a public/private key pair.

10 10. The cryptographic device of claim 2, wherein the processor is programmed to include a state machine for determining a state corresponding to availability of commands in conjunction with the roles.

15 11. The cryptographic device of claim 1, wherein the processor is stateless.

20 12. The cryptographic device of claim 1, wherein the processor is programmed to prevent unauthorized and undetected modification of data.

25 13. The cryptographic device of claim 1, wherein the processor is programmed for preventing unauthorized disclosure of data.

30 14. The cryptographic device of claim 1, wherein the processor is programmed to ensure proper operation of cryptographic security and VBI related meter functions.

35 15. The cryptographic device of claim 1, wherein the processor is programmed for providing indications of an operational state of a VBI meter.

16. The cryptographic device of claim 2, wherein the processor is programmed for supporting multiple concurrent users and maintaining a separation of roles and operations performed by each user.

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17. The cryptographic device of claim 1, wherein the processor stores information about a number of last transactions in an internal register and compares the information saved in the register with the information saved in a memory before loading a new transaction data.

18. The cryptographic device of claim 17, wherein the memory includes data for creating indicium, account maintenance, and revenue protection.

19. The cryptographic device of claim 1, wherein the value bearing item is a postage value including a postal indicium.

20. The cryptographic device of claim 19, wherein the postal indicium comprises a digital signature.

21. The cryptographic device of claim 19, wherein the postal indicium comprises a postage amount.

22. The cryptographic device of claim 19, wherein the postal indicium comprises an ascending register of used postage and descending register of available postage.

23. The cryptographic device of claim 1, wherein the value bearing item is a ticket.

24. The cryptographic device of claim 1, wherein the value bearing item includes a bar code.

25. The cryptographic device of claim 1, wherein the value bearing item is a coupon.

26. The cryptographic device of claim 1, wherein the value bearing item is currency.

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27. The cryptographic device of claim 1, wherein the value bearing item is a voucher.

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28. The cryptographic device of claim 1, wherein the value bearing item is a traveler's check.

29. The cryptographic device of claim 1, wherein each security device transaction data includes an ascending register value, a descending register value, a respective cryptographic device ID, an indicium key certificate serial number, a licensing ZIP code, a key token for an indicium signing key, user secrets, a key for encrypting user secrets, data and time of last transaction, last challenge received from a respective client subsystem, an operational state of the respective device, expiration dates for keys, and a passphrase repetition list.

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30. The cryptographic device of claim 1, wherein the processor is capable of sharing a secret with a plurality of other cryptographic devices.

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31. The cryptographic device of claim 1, wherein the processor and the cryptographic engine generate a master key set (MKS).

32. The cryptographic device of claim 31, wherein the MKS includes a Master Encryption Key (MEK) used to encrypt keys when stored outside the device.

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33. The cryptographic device of claim 32, wherein the MKS further includes a Master Authentication Key (MAK) used to compute a DES MAC for signing keys when stored outside of the device.

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34. The cryptographic device of claim 31, wherein the MKS is exported to other cryptographic devices.

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35. The cryptographic device of claim 1, further comprising a memory including a user profile for a subset of the plurality of users.

36. The cryptographic device of claim 35, wherein the user profile includes username, user role, password, logon failure count, logon failure limit, logon time-out limit, account expiration, password expiration, and password period

37. The cryptographic device of claim 10, wherein the state machine comprises of an uninitialized state, an initialized state, an operational state, an administrative state, an exporting shares state, an importing shares state, and an error state.

38. The cryptographic device of claim 37, wherein the operational state comprises means for access control, means for session management, and means for key management, and means for audit support.

39. The cryptographic device of claim 1, wherein the cryptographic engine is programmed to perform one or more of Rivest, Shamir and Adleman (RSA) public key encryption, DES, Triple-DES, DSA signature, SHA-1, and Pseudo-random number generation algorithms.

40. The cryptographic device of claim 1, wherein at least one of the plurality of users is an enterprise account.

41. A method for securing data on a computer network including a plurality of users comprising the steps of:

authenticating and authorizing the plurality of users for secure processing of a value bearing item;

storing a security device transaction data in a memory for

ensuring authenticity and authority of one of the plurality of users,

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wherein the security device transaction data is related to the one of the plurality of users; and

5 including cryptographically protected data using a stored secret.

42. The method of claim 41 further comprising the step of printing the value bearing item.

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43. The method of claim 41 further comprising the step of storing a plurality of security device transaction data in a database wherein, each transaction data is related to one of the plurality of users.

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44. The method of claim 43 further comprising the step of loading a security device transaction data related to the cryptographic device when the user requests to operate on a value bearing item.

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45. The method of claim 41 further comprising the steps of authenticating the identity of each user and verifying that the identified user is authorized to assume a role and to perform a corresponding operation.

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46. The method of claim 45, wherein the assumed role is an administrator role to manage a user access control.

47. The method of claim 45, wherein the assumed role is a provider role to authorize increasing credit for a user account.

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48. The method of claim 45, wherein the assumed role is a user role to perform expected IBIP postal meter operations.

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49. The method of claim 45, wherein the assumed role is a security officer role for initiating key management function.

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50. The method of claim 45, wherein the assumed role is a key custodian role to take possession of shares of keys.

51. The method of claim 45, wherein the assumed role is an auditor role to manage audit logs.

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52. The method of claim 41, further comprising the step of printing a postage value including a postal indicium.

53. The method of claim 52, wherein the postal indicium comprises a digital signature.

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54. The method of claim 52, wherein the postal indicium comprises a postage amount.

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55. The method of claim 52, wherein the postal indicium comprises an ascending register of used postage and descending register of available postage.

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56. The method of claim 41, further comprising the step of printing a ticket.

57. The method of claim 41, further comprising the step of printing a bar code.

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58. The method of claim 41, further comprising the step of printing a coupon.

59. The method of claim 41, further comprising the step of printing a currency.

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60. The method of claim 41, further comprising the step of printing a traveler's check.

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61. The method of claim 41, further comprising the step of printing a voucher.

62. The method of claim 41, further comprising the step of
10 storing a user profile for a subset of the plurality of users.

63. The method of claim 62, wherein the user profile includes username, user role, password, logon failure count, Logon failure limit, logon time-out limit, account expiration, password expiration,
15 and password period

64. The method of claim 41, further comprising the step of performing one or more of Rivest, Shamir and Adleman (RSA) public key encryption, DES, Triple-DES, DSA signature, SHA-1, and Pseudo-random
20 number generation algorithms by each of the cryptographic devices.

65. The method of claim 41, further comprising the steps of supporting multiple concurrent operators and maintaining a separation of roles and operations performed by each operator.
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66. The method of claim 41, further comprising the steps of:
storing information about a number of last transactions in a respective internal register of each of the one or more cryptographic devices;

30 storing a table including the information about a last transaction in the database; and

comparing the information saved in the respective device with the respective information saved in the database.

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67. The method of claim 66, further comprising the step of loading a new transaction data if the respective information stored in the device compares with the respective information stored in the database.

68. The method of claim 41, wherein the secret is a password.

69. The method of claim 41, wherein the secret is a public/private key pair.

70. The method of claim 41, wherein at least one of the plurality of users is an enterprise account.